TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2017-04-05-01** **Date: 08-04-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.
Agency	:	R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore
Customer Reference	:	BBMP/EE/BTP/WO/241/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-04-17
Sample ID No	:	2017-04-05-01/02(b)
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	05-04-17

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	438	438	8.8	91.2	90-100
3	10 mm	2831	3269	65.4	34.6	25-55
4	4.75 mm	1358	4627	92.5	7.5	0-10
5	Pan	373	5000	100	0	_

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2017-04-05-01** **Date: 08-04-17**

Sample ID No : 2017-04-05-01/02(b)

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	13.3	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	12.9	
3	Specific Gravity	2.63	_
4	Bulk Density(Loose) (Kg/l)	1.51	_
5	Bulk Density(Compacted) (Kg/l)	1.56	_
6	Water Absorption(%)	0.27	_
7	Aggregate crushing Value(%)	24.5	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	23.8	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

Note:

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Authorized Signature
Quality Manager

End of Report

TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2017-04-05-01** **Date: 08-04-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.
Agency	:	R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore
Customer's Reference	:	BBMP/EE/BTP/WO/241/2016-17
Source of Sample	:	Sample supplied by Agency
Sample condition	:	Satisfactory
Date of Receipt	:	05-04-17
Sample ID No	:	2017-04-05-01/02(a)
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	05-04-17

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	1097	1097	7.3	92.7	90-100
3	20 mm	6284	7381	49.2	50.8	30-70
4	10 mm	4729	12110	80.7	19.3	10-35
5	4.75 mm	2175	14285	95.2	4.8	0-5
6	Pan	715	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2017-04-05-01** **Date: 08-04-17**

Sample ID No : 2017-04-05-01/02(a)

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	13.7	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	14.1	
3	Specific Gravity	2.61	_
4	Bulk Density(Loose) (Kg/l)	1.57	_
5	Bulk Density(Compacted) (Kg/l)	1.55	_
6	Water Absorption(%)	0.2	_

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Authorized Signatory
Quality Manager

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID : **CP-2017-04-05-01** **Date: 06-04-17**

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.

Agency : R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore

Customer's Reference : BBMP/EE/BTP/WO/241/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 05-04-17

Sample ID No : 2017-04-05-01/01

Sample Type : Birla Super 53grade

Reference to BIS codes : IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,
IS 4031 (Part 1,2 3,4,5, 6,11):1988
IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4
IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5
IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6
IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5
IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5
IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6

Date of test : 05-04-17

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.84	–
2	Finess by Air permeablity method (m^2/kg, Min)	271.5	225m^2/kg, Min
3	Density (gm/cc)	3.19	–
4	Standard Consistency (%)	28.5%	Not specified
5	Initial Setting time	165 minutes	Not less than 30 minutes
6	Final Setting time	280 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1.5mm	Not more than 10 mm

Note:

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-04-05-01** **Date: 03-05-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.
Agency	:	R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore
Customer's Reference	:	BBMP/EE/BTP/WO/241/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-04-17
Sample ID No	:	2017-04-05-01/01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	05-04-17

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.0N/mm^2	Not less than 27 N/mm^2
2	7 Days	39.0N/mm^2	Not less than 37 N/mm^2
3	28 Days	56.5N/mm^2	Not less than 53 N/mm^2

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****End of Report****

TEST REPORT OF FINE AGGREGATE

Lab ID	:	**CP-2017-04-05-01** **Date: 08-04-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.
Agency	:	R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore
Customer's Reference	:	BBMP/EE/BTP/WO/241/2016-17.
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-04-17
Sample ID No	:	2017-04-05-01/03
Sample Type	:	Fine Aggregate
Reference to BIS codes	:	IS 383 : 2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1, 3) RA2012 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption
Date of test	:	05-04-17
Total weight taken	:	1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	76	76	7.6	92.4	90-100	90-100	90-100	95-100
3	2.36 mm	177	253	25.3	74.7	60-95	75-100	85-100	95-100
4	1.18 mm	182	435	43.5	56.5	30-70	55-90	75-100	90-100
5	600 micron	204	639	63.9	36.1	15-34	35-59	60-79	80-100
6	300 micron	234	873	87.3	12.7	5-20	8-30	12-40	15-50
7	150 micron	62	935	93.5	6.5	0-10	0-10	0-10	0-15
8	Pan	65	1000	100.0	0.0	---	---	---	---
Result :The tested Sample Conforms to Grading Zone II									

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2017-04-05-01** **Date: 08-04-17**

Sample ID No : 2017-04-05-01/03

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.78	_
2	Specific Gravity	2.58	_
3	Material finer than 75 micron(%)	5.7	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

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TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2017-04-05-01** **Date: 08-04-17**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.
Agency	:	R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore
Customer's Reference	:	BBMP/EE/BTP/WO/241/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-04-17
Sample ID No	:	2017-04-05-01/04
Sample Type/Size	:	Solid concrete blocks of size (400X200X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex - C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	05-04-17

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	403	201	203	16444	31.746	1930.6	1955.0	Not less than 1800Kg/m^3
2	400	203	200	16240	32.264	1986.7		
3	402	202	201	16322	31.789	1947.6		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	33.263	31.362	6.06	7.34	Shall not be more than 10% by mass
2	33.658	31.147	8.06		
3	34.174	31.675	7.89		

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Lab ID : **CP-2017-04-05-01** **Date: 08-04-17**

Sample ID No : **2017-04-05-01/04**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	401	201	200	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	402	202	203	
3	400	200	201	
4	401	200	200	
5	403	202	202	
6	400	200	201	
7	402	202	203	
8	401	203	200	
9	400	202	203	
10	402	200	203	
11	403	201	200	
12	401	203	202	
13	402	201	201	
14	403	200	201	
15	403	202	200	
16	401	203	203	
17	402	203	202	
18	402	201	201	
19	400	201	200	
20	401	200	202	
Average of 20	**402**	**201**	**201**	

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Lab ID : CP-2017-04-05-01 **Date: 08-04-17**

Sample ID No : 2017-04-05-01/04

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	401	201	80601	319.6	4.0	3.9
2	402	202	81204	283.7	3.5	
3	400	200	80000	368.8	4.6	
4	401	200	80200	291.6	3.6	
5	403	202	81406	329.9	4.1	
6	400	200	80000	288.2	3.6	
7	402	202	81204	291.8	3.6	
8	401	203	81403	353.7	4.3	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	Minimum average	Minimum Individual units.
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2017-04-17-02** **Date: 21/04/2017**

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.

Agency : R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore

Customer's Reference : BBMP/EE/BTP/WO/241/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-04-17

Sample ID No : 2017-04-17-02/01

Customer ID : M15 Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 21/04/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	M15 Concrete	M15	14/04/2017	21/04/2017	150.82 X 151.54 X 148.95	22855	8.261	283.4	12.4	12.1
2	M15 Concrete	M15	14/04/2017	21/04/2017	149.82 X 150.52 X 151.55	22551	8.276	272.9	12.1	
3	M15 Concrete	M15	14/04/2017	21/04/2017	151.28 X 149.35 X 151.51	22594	8.198	268.9	11.9	

Note:

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2017-04-17-02** **Date: 12/05/2017**

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Construction of two Pure drinking water units in Ward No.07, Byatarayanapura.

Agency : R. Vasanth, #20, A T Layout, Nagashettyhalli, RMV 2nd Stage, Bangalore

Customer's Reference : BBMP/EE/BTP/WO/241/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 17-04-17

Sample ID No : 2017-04-17-02/02

Customer ID : M15 Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 12/05/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	M15 Concrete	M15	14/04/2017	12/05/2017	149.28 X 150.45 X 149.95	22459	8.261	368.3	16.4	16.8
2	M15 Concrete	M15	14/04/2017	12/05/2017	150.28 X 151.25 X 150.35	22730	8.276	388.7	17.1	
3	M15 Concrete	M15	14/04/2017	12/05/2017	150.27 X 151.35 X 150.18	22743	8.198	382.1	16.8	

Note:

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